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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/767,547	01/28/2004	Charles L. Gray JR.	310121.416	6590

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EXAMINER	
LAZO, THOMAS E	
ART UNIT	PAPER NUMBER
3745	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/767,547	GRAY, CHARLES L.	
	Examiner	Art Unit	
	Thomas E. Lazo	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-20 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-20 is/are rejected.

7)☒ Claim(s) 9 is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _____ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date 1/28/04 6/13/05 9/30/05.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 9 is objected to because of the following informalities:

In claim 9, line 1, "claim 1" should be --claim 3-- (antecedent basis for "the spool").

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-4, 8, 10-12, and 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Kolchinsky (FR 2106951). Kolchinsky discloses a hydraulic actuator device with a piston 20 within a cylinder 17, a first fluid port in fluid communication with an open side of the piston 20, and a second fluid port in fluid communication with a shaft side of the piston 20, a spool valve 2 having first and second control ports coupled to the first and second fluid ports 15,14, respectively, wherein the piston 20 travels in a first direction toward the shaft side of the piston and a second direction toward the open side of the piston, a first position of the spool valve 2 places the first and second control ports 15,14 in fluid communication with a high-pressure fluid source 12 when piston travel in the first direction is desired, a second position of the spool valve 2 closes the first control port 15 and the second control port 14 when no piston travel is desired,

and a third position of the spool valve places the first control port 15 in fluid communication with the low pressure fluid source and the second control port 14 in fluid communication with the high-pressure fluid source 12 when travel in the second direction is desired.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolchinsky in view of Schuttenberg et al. (DE 3824205 A1). Kolchinsky discloses all of the claimed subject matter except for a feedback mechanism and a solenoid.

Schuttenberg et al teaches for a hydraulic actuator device with a piston within a cylinder 23, a first fluid port, a second fluid port and a spool valve 10 and that there is a feedback mechanism 37 configured to apply biasing force to the spool 10 in a direction toward the first position, wherein piston travel in the second direction tends to increase the biasing force and piston travel in the first direction tends to decrease the biasing force, wherein the feedback mechanism 37 is an electro-mechanical linkage with a position sensor 32 configured to sense a position of the piston, and a solenoid 14 coupled to the spool, configured to variably apply biasing force to the spool to urge the spool from the first position toward the second, and from

the second position toward the third position, according to a voltage level at an input of the solenoid 14 corresponding to the sensed position of the piston for the purposes of safely positioning the actuator.

Since Kolchinsky and Schuttenberg are both hydraulic actuator devices, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Kolchinsky, based on the teachings of Schuttenberg, to include a feedback mechanism configured to apply biasing force to the spool in a direction toward the first position, piston travel in the second direction tending to increase the biasing force and piston travel in the first direction tending to decrease the biasing force, wherein the feedback mechanism is an electro-mechanical linkage with a position sensor configured to sense a position of the piston, and a solenoid coupled to the spool, configured to variably apply biasing force to the spool to urge the spool from the first position toward the second, and from the second position toward the third position, according to a voltage level at an input of the solenoid corresponding to the sensed position of the piston for the purposes of safely positioning the actuator.

Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kolchinsky in view of Floyd (3,290,996). Kolchinsky discloses all of the claimed subject matter except for a feedback mechanism.

Floyd teaches for a hydraulic actuator device with a piston 6 within a cylinder 5, a first fluid port, a second fluid port and a spool valve 1 and that there is a feedback mechanism 11 configured to apply biasing force to the spool 7 in a direction toward the first position, wherein piston travel in the second direction tends to increase the biasing force, piston travel in the first

direction tends to decrease the biasing force, and the feedback mechanism is a mechanical linkage configured to vary biasing force against a spring 9 coupled to the spool 7 for the purposes of safely positioning the actuator.

Since Kolchinsky and Schuttenberg are both hydraulic actuator devices, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Kolchinsky, based on the teachings of Schuttenberg, to include a feedback mechanism configured to apply biasing force to the spool in a direction toward the first position, wherein piston travel in the second direction tends to increase the biasing force, piston travel in the first direction tends to decrease the biasing force, and the feedback mechanism is a mechanical linkage configured to vary biasing force against a spring coupled to the spool for the purposes of safely positioning the actuator.

Claims 13-16 and 18-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over in view of Kolchinsky, as applied to claim 17 above, in view of Akasaka et al. (5,094,144). Kolchinsky discloses an actuator with a shaft 19, a piston 20 coupled to the shaft 19, wherein the piston 20 moves within a cylinder 16 in response to differential pressure acting on first and second surfaces thereof, and a valve 1 couples a high-pressure fluid accumulator 12 to the actuator such that high-pressure fluid is made to act on the first and second surfaces of the piston 20 when movement of the shaft in a first direction is desired, the valve couples the high-pressure accumulator 12 and a low pressure accumulator (tank) to the actuator such that high-pressure fluid is made to act on the first surface of the piston 20 while low-pressure fluid is made to act on the second surface of the piston 20 when movement of the shaft in a second direction is desired,

and the valve 1 decouples the high and low-pressure fluid sources from the actuator when no movement of the shaft 19 is desired. Kolchinsky does not disclose a pump/motor configured to have a displacement directly related to a stroke angle of a cylinder barrel relative to a drive plate, the actuator being coupled to the cylinder barrel and configured to vary the stroke angle thereof according to a position of the shaft of the actuator and a vehicle coupled to the pump/motor.

Akasaka et al. teaches for an actuator 15 with a shaft and a piston 18 coupled to the shaft and that there is a system with a pump/motor 1 configured to have a displacement directly related to a stroke angle of a cylinder barrel 8 relative to a drive plate 6, wherein the actuator 15 is coupled to the cylinder barrel 8 and configured to vary the stroke angle thereof according to a position of the shaft of the actuator 15, the actuator 15 is coupled to the cylinder barrel 8 such that movement of the shaft in the first direction causes the cylinder barrel 8 to rotate in a direction that reduces the angle of the cylinder barrel 8 relative to the drive plate 6 while movement of the shaft in the second direction causes the cylinder barrel 8 to rotate in a direction that increases the angle of the cylinder barrel 8 relative to the drive plate 6, and a vehicle (figure 6) has a drivetrain coupled to an output shaft of the pump/motor to receive motive force therefrom for the purposes of safely controlling displacement of the pump/motor

Since Kolchinsky and Akasaka et al. are both hydraulic actuator devices, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to modify the device of Kolchinsky, based on the teachings of Akasaka et al., to include a system with a pump/motor configured to have a displacement directly related to a stroke angle of a cylinder barrel relative to a drive plate, wherein the actuator is coupled to the cylinder barrel and configured to vary the stroke angle thereof according to a position of the shaft of the actuator, the

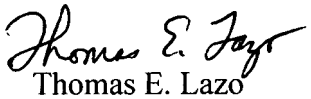
actuator is coupled to the cylinder barrel such that movement of the shaft in the first direction causes the cylinder barrel to rotate in a direction that reduces the angle of the cylinder barrel relative to the drive plate while movement of the shaft in the second direction causes the cylinder barrel to rotate in a direction that increases the angle of the cylinder barrel relative to the drive plate, and a vehicle has a drivetrain coupled to an output shaft of the pump/motor to receive motive force therefrom for the purposes of safely controlling displacement of the pump/motor.

Contact Information

Any inquiry concerning this communication or earlier communication from the examiner should be directed to Thomas Lazo whose telephone number is (571) 272-4818. The examiner can normally be reached on Monday-Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor Edward Look, can be reached on (571) 272-4820. The fax phone number for this Group is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Thomas E. Lazo
Primary Examiner
Art Unit 3745
June 4, 2007